[ACTIVE NIGHT VISION SYSTEM FOR VEHICLES EMPLOYING SHORT-PULSE LASER ILLUMINATION AND A GATED CAMERA FOR IMAGE CAPTURE]

Abstract of Disclosure

A method of detecting objects with a night vision system is provided. The night vision system includes a light source and a camera. The method includes activating the light source as a sequence of light pulses wherein each light pulse is increasing in intensity for a predetermined number of pulses to form a pulse train. The camera is activated as a corresponding sequence of detection windows wherein each of the windows corresponds to one of the light pulses for receiving reflected light resulting from the corresponding light pulse. The light pulses and detection windows are configured such that a time delay between each corresponding light pulse and detection window is increasing throughout the pulse train. In another variation, the camera gain is increased throughout the pulse train. In yet another variation, the light pulses have constant amplitude, the camera gain is constant for all pulses, and the number of camera gain windows increases as the delay increases. In all cases, objects nearer the night vision system are imaged with lower intensity light, less camera gain, and/or fewer laser pulses than objects further away to provide a composite image in which the apparent brightness of near and far objects can be controlled.